Q Manage Health Care
Vol. 17, No. 4, pp. 275–286

Rethinking Satisfaction Surveys: Minute Survey

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The Minute Survey of patient's satisfaction uses 2 questions to assess his/her satisfaction. The first question asks the patient to rate overall satisfaction with the care. The second question asks the patient to explain what worked well and what needed improvement. The Minute Survey reduces cost of conducting satisfaction surveys by (1) reducing cost of printing, (2) reducing cost of handling and mailing, (3) increasing response rate and thus reducing the need for follow-up reminder, and (4) by relying on time to dissatisfied patient as opposed to percent of dissatisfied patients. We report response rate of 34% to 77% to minute surveys. The combination of Minute Survey and analysis of time to dissatisfied patient may reduce the cost of conducting satisfaction surveys by 89% compared with Consumer Assessment of Healthcare Providers and Systems survey suggested for use by Centers for Medicare and Medicaid.

This article introduces the Minute Survey and contrasts it to some of the common instruments in use for assessing patient satisfaction with care. The satisfaction survey industry has grown in recent years. Studies examining the various dimensions of satisfaction, the accuracy and reliability of satisfaction surveys, and the relationship between satisfaction and other measures of quality have recently been published. In fact, measuring patient satisfaction has become so important that an industry has developed focusing entirely on conducting satisfaction surveys. Hospitals award large contracts to companies to conduct satisfaction surveys. Third party payers, such as Centers for Medicare and Medicaid (CMS), use satisfaction surveys to benchmark hospital performance.

Cost concerns prevent some health care organizations from employing satisfaction surveys and a common complaint against CMS proposed mandatory reporting of satisfaction is cost of such efforts.[1]2. Below, **[AQ2]**

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We acknowledge the help we received in conducting satisfaction surveys from Angela Schob, Senior Director of Outpatient Services; Melissa Mills, Director of Outpatient/Special Procedures; and Karla Kenefake-Hymans, Director of Medical Imaging at Fauquier Hospital.

2] this article shows how to reduce the cost of conducting satisfaction surveys by reducing the length of the survey (increasing response rate) and through using new methods of data analysis that enable us to reduce the number of patient's surveyed.

DESCRIPTION OF THE MINUTE SURVEY

The *Minute Survey* is intended for evaluation of satisfaction with care in different settings, hospitals, clinics, and home health setting. It is one standardized form that can be applied to a variety of settings.

In the Minute Survey, 4 pieces of information are recorded, 2 by the provider (visit and location code) and 2 by the patient (overall rating and open-ended question). The visit code links the patient response to a specific visit and data available on the visit. Satisfaction surveys can be analyzed per provider, per Diagnostic Related Group, per shift, per gender, or through other groupings. The link to visit code allows the analysis of the data for different subgroups. If no subgroup analysis is planned, the visit code is replaced by a consecutive visit number (ie, 001, 002, etc). A consecutive visit number is necessary for the measurement of number of visits before finding a dis-
3] satisfied customer.* Time to Dissatisfied Patient is a method used in conjunction with the Minute Survey to reduce the number of patients surveyed. This method is explained later in this article.

The location code marks the business unit (eg, department, office, or floor) involved in the survey. Survey forms are mailed or handed to patients prior to the delivery of care. Alternatively, patients can be given the survey at the time of registration. If patients are surveyed after leaving the facility, the survey is mailed from a central location with the location of code of the business unit under study included in the survey. If improvements being implemented are organization wide, then no location code is used. The patient is asked to answer 2 questions. The first question asks the patient to rate his or her overall experience:

1. Were you satisfied with your care?
   - Exceeded my expectation
   - Satisfied
   - Not sure
   - Not satisfied
   - Did not meet my minimum expectation

   Other options for asking the same question include, "rate your overall satisfaction with care." The second question in the Minute Survey provides the explanation for the rating:
2. Tell us what worked well and what needs improvement?

   This open-ended question provides an opportunity for patients to explain the reasoning behind their satisfaction rating. It has been our experience that answers to open-ended questions adds insight to questions that rate the patient's satisfaction with providers. This is supported by studies on the benefits of using open-ended question in surveys.[2] Sometimes these open-ended questions contradict the ratings (eg, a person may indicate overall satisfaction with the care but complain about a specific aspect of the care). Note that the way we have phrased the open-ended question solicits both complaints and praises.

The Minute Survey is typically printed on a postcard that contains no personal information. Patients are encouraged to drop their response in a secure and confidential box before leaving the organization; however, some patients may wish to mail the postcard at a later time. The postcard can be mailed at a lower mailing and handling cost than a multipage survey within an envelope. Utilizing a third party to collect and analyze the data will alleviate patients concerns about criticizing their providers directly and may increase participation. In addition, a third party data collection agent can better ensure patient confidentiality through aggregating

*Throughout this article, we refer time to dissatisfied patient. It is important to realize that this variable may be measured in different units (ie, days to dissatisfied patient, number of visits to dissatisfied patient). The choice of the specific unit depends on the intended use of the satisfaction data. In clinics, we prefer visits until dissatisfied patient and in hospitals we prefer number of discharges till dissatisfied patient.

the responses from all patients before reporting the results.

Consecutive complaints of satisfied patients in the pain clinic

The central idea behind the Minute Survey is to ask the bare minimum questions necessary for analysis of the time to dissatisfied patients. It is proposed that a shorter survey form and the need to survey fewer patients will reduce the burden of conducting the survey, improve response rate, and ultimately reduce cost of evaluating patient satisfaction.

UTILITY OF INFORMATION MISSING IN THE MINUTE SURVEY

There are unique differences between the "typical" patient satisfaction survey and the Minute Survey. The most common patient satisfaction surveys are longer than 2 questions and many attempt to gather demographic data to provide subgroup analysis information. In contrast, the Minute Survey has only 2 questions and demographic information other than the patient visit code is absent. Demographic data are thus derived from existing data about the visit and not collected again.

Most traditional satisfaction surveys attempt to gather data on various components of satisfaction so that managers and improvement teams have a better sense of how to improve satisfaction. Typically, 2 broad components are surveyed by traditional surveys: technical care and interpersonal care. The Consumer Assessment of Healthcare Providers and Systems (CAPHS) questionnaire focuses on communication with nurses, communication with doctors, responsiveness to patient needs, physical environment, pain control, communication about medication, and discharge information.[3] The patient satisfaction questionnaire assesses the following dimensions: (1) technical care, (2) interpersonal behavior, (3) access to care, (4) availability of providers, (5) continuity of care, (6) environment of care, and (7) finances. The patient judgment of hospital quality questionnaire is based on the following dimensions: (1) nursing care, (2) medical care, (3) hospital environment, (4) information provided, (5) admission procedures, (6) discharge procedures, and (7) finances. As can be seen from these 3 examples, questionnaires differ on which components of care they measure. Surveys may specifically ask for source of dissatisfaction by asking the client to attribute the dissatisfaction to specific provider groups (eg, physician or nurse). Questionnaires may try to attribute the problem to specific care processes (eg, admission process or laboratory services). Typically, detailed statistical analysis is conducted to identify the dimensions of patients' satisfaction ratings.[4]

In contrast, the Minute Survey reduces the number of questions to only 2 and does not explicitly collect any information on sources of and components of dissatisfaction. This raises the question about what is lost when asking only 2 questions instead of longer surveys. One reason to drop questions on sources of dissatisfaction is because many decision makers do not use this information even when it is available.[5] When managers think of patient satisfaction, they think of it as the patient's satisfaction with the total experience and not with any unique component of the experience. This type of focus on total experience is most apparent in published reports of satisfaction. For example, a recent book on patient satisfaction appeals to managers that they should measure patient satisfaction to manage patient loyalty, cost of care, frequency of lawsuits, and many other outcomes.[6] In all of these claims of why satisfaction surveys should be used, the book focuses on the relationship between overall satisfaction with care and other variables of interest and not with any components of satisfaction. The case for measuring patient satisfaction is based on overall satisfaction with care and not the components of satisfaction with care.

One may imagine that the additional information collected helps managers set priorities for where improvements in patient satisfaction are needed. Even here, it is unlikely that information on components of satisfaction surveys is going to be useful. Managers can easily set priorities on the basis of overall satisfaction with care. They cannot easily do so when reviewing various components of satisfaction, some of which could be contradictory. The contradictions

among components of satisfaction surveys have led some to call for abandoning the use of these surveys as a national benchmark.[7] A focus on various components of satisfaction raises the thorny question of how to set priorities for action when they are contradictory.

Even if managers want to use patient's ratings of components of satisfaction, they may have misleading data as patient attributions of causes of dissatisfaction maybe erroneous. When a survey asks about specific components of care, it prompts the patient to think through that component. It highlights specific issues that presumably managers and improvement team would like to hear about. At the same time, such prompted questions exclude other aspect of care and restrict patient's responses.[8] For example, asking about access to care may lead to comments about availability of care but may reduce comments on aftercare services, such as laboratory test callbacks. This has led some to argue that current patient satisfaction surveys distort the patient's views.[9] The Minute Survey does not guide the patient to comment on any specific aspect of care. It records what the patient selects to focus on. Unprompted survey questions may be more accurate in capturing the patient's views than prompts leading patients through specific domains.*

Even when patients correctly attribute their dissatisfaction to a particular group of providers (eg, physicians' bedside manner or nurses' empathy), the information should be ignored. Blaming providers maybe counterproductive. This way of looking at care assumes that providers are independent operators. This is almost never the case. Patients may perceive these providers as independent groups and may rate them independently but these professionals rely on each other and work within one process. What a physician may forget to do may add to the task of a nurse and may affect patients' reaction to the receptionist. Imagine a conflict between a physician and a nurse. The patient has most contact with the nurse and would see a frustrated nurse and thus blame the nurse. But the root of the problem was the earlier conflict. We know from numerous studies that communication between providers is a determinant of quality of care and, de facto, patient's satisfaction with care.[10] Employee and patient satisfaction are interrelated.[11] The reality of health care delivery is that all providers work together to produce the care. Attribution of poor care to specific group of providers is problematic. In an era where health care organizations are instructed to conduct continuous quality improvements, where organizations are told to seek system change, where managers are asked to create a blame-free culture of change, a focus on the source of dissatisfaction with care does the opposite. It blames a group of clinicians and disregards the interdependency of these clinicians with others. Instead of interdisciplinary work, it encourages solutions that apply to specific groups of providers. Satisfaction surveys that trace various sources of dissatisfaction to specific groups of providers maybe counterproductive because they do not promote system thinking.

VALIDITY OF MINUTE SURVEY

The validity of the Minute Survey can be examined by assessing the first question, which rates the patient's overall satisfaction with care. Fortunately, considerable data exists on the validity of similar questions on overall satisfaction with care. Almost all studies of satisfaction survey use a question to assess that. The exact wording may be different but all focus on overall rating of satisfaction with care. Sitza analyzed 195 studies of satisfaction with care and reported the median correlation of the rating of overall satisfaction and number of other measures of satisfaction (Table 1).[12] These data show that the median correlation between ratings of overall satisfaction in 2 different instruments was 0.86. When health

*Some authors argue that the question on the total satisfaction rating should be asked after questions about all other aspects of care have been answered. They argue that the order of questions matters. This is unfortunate because if order of asking questions matters then we are not getting what the patient really feels but what the sequence of questions have led the patient to express. In short, if order matters then satisfaction ratings are an artifact of the questionnaire and not an indication of the patient's preferences.

Table 1

CORRELATION BETWEEN OVERALL RATING OF SATISFACTION AND VARIOUS CRITERIA[a]

Criterion	Number of studies	Median correlation
Rating of overall satisfaction in different instruments	2	0.86
Individual items in same instrument	1	0.80
Rating of global quality	2	0.72
Recommend the care to others	3	0.68
Health professionals' rating of patient's satisfaction	4	0.56
Intent to return to the same place	5	0.51
Functional status	1	0.38
Health-related quality of life	2	0.29
Psychological status	4	0.26

[AQ10]

[a]Reprinted with permission from Sitzia J.[12]

professionals rated the satisfaction of their patients, these ratings were correlated with the patient's own rating (median correlation of 0.51). These studies show a moderate to high construct validity, that is, different methods of assessing satisfaction leads to the same ratings.

Sitza's review indicates that overall satisfaction is highly correlated with a number of other criteria measured by the same instrument (correlation of 0.80). A median correlation of 0.72 is reported between the rating of overall satisfaction and the rating of quality of service. A median correlation of 0.68 is reported between the rating of overall satisfaction and the recommending of service to others. These studies show a moderate level of predictive validity, that is, overall rating of satisfaction predicts other concepts such as patient loyalty and patient's perceived quality of care.

Numerous other studies support the predictive accuracy of overall ratings of satisfaction. In one study, profit levels were related to overall patient satisfaction 5 years earlier.[6] In other studies, overall patients' satisfaction predicted likelihood of lawsuits.[13,14] These studies taken as a whole suggest that overall patients satisfaction has predictive accuracy.

ANALYSIS OF TIME TO DISSATISFIED CUSTOMER

In most organizations, the majority of patients report satisfaction with their care—dissatisfied patients are rare. In analysis of rare events, it is important to focus on the time to the event as opposed to the event itself. Data from Minute Surveys are analyzed using the time to a dissatisfied patient as opposed to percentage of dissatisfied patients. By focusing on the interval between dissatisfied patients, the power of the analysis is enhanced and the number of patients needed for the survey is reduced.[15] Time-between control charts are the most appropriate measure for this type of study.[16,17] Benneyan has described the statistical details of these charts.[15,18] Others have applied this approach to analysis of the time to the next medication errors[19] and analysis of the time to the next asthma attack.[17] Here, we describe how the approach can be used to analyze the time to the next dissatisfied patient.

The time-between control charts make a number of assumptions. It assumes that one has data on the date of the patient survey (or the consecutive visit number). It also assumes there is only one observation per time period. Thus, if there are several dissatisfied patients in a day, it is important to analyze complaints per visit as opposed to per day so that there is at most only 1 dissatisfied patient per time period. In a time-between control chart, the control limits are calculated from the ratio R, which is defined as follows:

$$R = \frac{\text{Time periods when patient was dissatified}}{\text{Time periods when patient was satisfied}}$$

The Upper control limit (UCL) and Lower control limit (LCL) are calculated as follows:

$$\text{UCL} = R + 3\sqrt{R(1+R)}$$

Because the event of interest is rare, no LCL is calculated (it will always be a negative number and negative number of days is not possible, therefore the

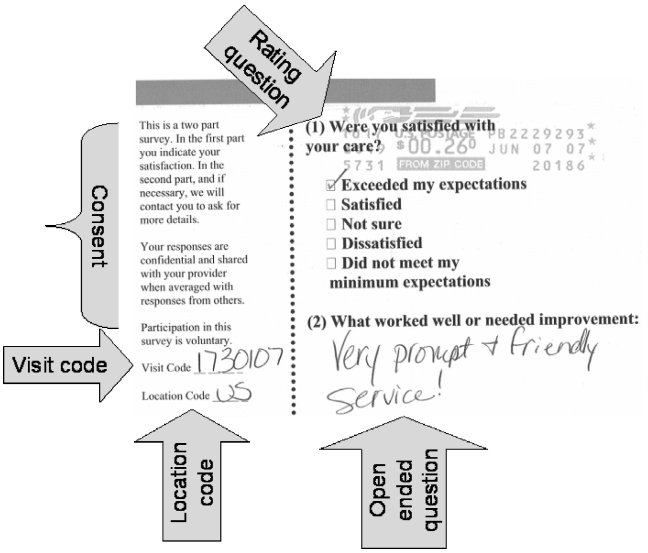

Figure 1. Shows elements of a minute survey. This survey was taken from a recent effort to gather patient satisfaction data within a clinic of a hospital in the United States.

LCL is set to 0 and not used in time-between control charts).

$LCL = 0$

The LCL and UCL should contain more than 99% of the data if the process has not changed.

Improvement teams use time-between control charts to detect process changes. If the number of visits until the next dissatisfied patient exceeds the UCL, this finding is unlikely to be due to chance alone (the probability of observing such an event is less than 1%). In these circumstances, we can conclude that it is taking longer to find the next dissatisfied patient; therefore the care process has been improved significantly.

The Minute Survey was used to examine the pattern of care within a clinic in a hospital in the United States (Figure 1). Data were collected from Decemeber 12, 2007, through December 28, 2007. A total of 152 patients were seen at this clinic during these 12 working days. The receptionist handed a postcard containing the Minute Survey to each patient when he checked into the clinic. Patients were asked to provide responses to the 2 questions and instructed to drop the postcard in the mailbox. On departure, no drop box was available to leave the postcard. No telephone follow-up or other reminders were employed to increase the response rate. Among the 152 eligible patients, 51 returned the postcards (34% response rate of eligible patients).

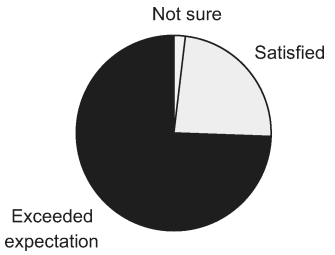

Figure 2. Ratings of satisfaction with clinic visit. No patients were dissatisfied or rated the service as below minimum expectation.

Figure 2 shows the respondents' rating of satisfaction with care: 75% of rated the visit as exceeding their expectations, 24% reported they were satisfied, 2% were not sure, and none were dissatisfied or reported that care was below their minimum expectations.

Ratings of satisfaction with clinic visit

No patients were dissatisfied or rated the service as below minimum expectation.

Table 2 shows the comments provided in response to the open-ended question in the Minute Survey. Analysis of these responses indicates many positive responses and 4 complaints, each providing suggestions for improvement. Many of the patient complaints did not fit standard responses for patient satisfaction surveys. For example, one patient complained, "the medicine taken prior to the visit needs improving." Another patient complained, "anesthesia was very painful as it worked its way into vein and up arm. I don't name of drug, but it was white/milky." **[AQ4]** These 2 complaints are likely to have been missed in surveys that try to fit patient's complaints into specific categories.

There are many other examples of how the responses collected by the Minute Survey might be missed in a longer and more structured traditional survey. The patient in visit 34 complains that "the

Table 2

COMMENTS MADE BY CONSECUTIVE RESPONDERS TO MINUTE SURVEY

Visit code	Clinic rating	What worked well and what needed improvement
0006	Satisfied	Nurses were very accommodating to me when I realized I had forgotten my contact case
0008	Exceeded my expectations	
0011	Satisfied	Things were fine
0014	Exceeded my expectations	
0018	Exceeded my expectations	Everything worked very efficiently
0020	Exceeded my expectations	Loved my nurse, Loved the cookie after my colonoscopy
0022	Satisfied	My nurses were really nice
0023	Exceeded my expectations	Very Professional care: doctor, and nurses were extremely nice
0025	Exceeded my expectations	From entry to exit the process moved along very smoothly. Great staff
0029	Exceeded my expectations	Great people—explain all procedures
0031	Exceeded my expectations	
0032	Exceeded my expectations	Nurses were great
0033	Exceeded my expectations	
0034	Not Sure	☒ The doctor's office didn't give me orders and it was quite a hassle getting thing done
0038	Exceeded my expectations	Very much pleased with the service
0000	Exceeded my expectations	
0042	Exceeded my expectations	BJ was wonderful nurse
0045	Exceeded my expectations	Ok
0056	Satisfied	Worked well—Ruby kept patient's family informed
0058	Exceeded my expectations	☒ The anesthesiologist was curt and discourteous to one of her coworkers
0059	Exceeded my expectations	My nurse was very nice and this helped me to be comfortable
0061	Exceeded my expectations	Everyone were very friendly
0062	Exceeded my expectations	Nurse made me so comfortable. I had wonderful care from beginning to end. Bravo
0064	Satisfied	Staff was timely, procedure was painless. Overall very satisfied with my care
0066	Exceeded my expectations	Everyone treated me very well. After procedure they made coffee for me with cookie
0073	Satisfied	Do not have a response at this time
0077	Exceeded my expectations	
0078	Exceeded my expectations	Personnel were friendly, efficient, and highly capable
0080	Exceeded my expectations	Communication worked very well
0081	Exceeded my expectations	Everything was fine. People were outstanding
0086	Exceeded my expectations	Everything was fine.
0088	Exceeded my expectations	All nurses were exceptional
0095	Exceeded my expectations	All went well
0097	Exceeded my expectations	
0102	Satisfied	☒ Check-in very efficient, Staff is friendly with sense of humor, stamp wasted for a drop off cards
0103	Satisfied	
0105	Exceeded my expectations	Zero problem
0111	Exceeded my expectations	Nothing
0114	Exceeded my expectations	Everything was great
0119	Exceeded my expectations	Lots of TLC for a very anxious patient
0122	Exceeded my expectations	The staff was professional, helpful and caring. Good experience overall
0129	Exceeded my expectations	
0130	Satisfied	All procedure were fine
0133	Exceeded my expectations	Staff very pleasant
0137	Exceeded my expectations	
0138	Satisfied	
0146	Exceeded my expectations	☒ The medicine taken prior to the visit needs improvment
0147	Satisfied	☒ All persons I dealt with were great. Anesthesia was very painful as it worked its way into vein and up arm. I do not know the name of the drug but it was white/milky
0148	Satisfied	
0149	Exceeded my expectations	Everything worked well
0150	Exceeded my expectations	Nothing

[a]☒ Indicates a satisfied patient with a complaint.

doctor's office didn't give me orders and it was quite a hassle getting thing done." It is not clear whom the patient is blaming for lack of specificity in the orders. It could be the physician, the nurse, or someone else at the office. Traditional surveys force the patient to select one or the other category and thus force an artificial choice on the patient. The patient at visit 58 complains about a discourteous behavior of the staff. Standard survey instruments that focus on behavior of physicians and nurses might miss dissatisfaction with other providers. The patient at visit 102 is concerned with wasting of a stamp. In a traditional survey, this comment will not fit any of the response categories and will be missed by the focus of the survey on other issues.

To more easily visualize these data, a control chart using the time-between charting methods was constructed. The UCLwas found by using the following steps:

Number of satisfied patients with complaints = 4

Number of satisfied patients without complaints = 47

Ratio $R = 4/47 = 0.08$

$$\text{UCL} = 0.08 + 3\sqrt{0.08(1 + 0.08)} = 0.99$$

The control chart constructed from these data is found in Figure 3. The number of consecutive responders who had a complaint is plotted on the Y-axis. The X-axis is plotted using the number of consecutive reporting visits. The straight line represents the UCL.

Any values plotted above the UCL are statistically significant and could not have occurred by mere chance. In this case, all 4 complaints were statistically significant and exceeded the UCL. In a clinic where patients are almost always satisfied, a few complaints would be considered a statistically unusual event.

In another study using the Minute Survey, data were collected between February 7, 2008, and February 8, 2008, at 2 different pain clinics in Virginia. On exit from the pain clinic, patients were asked to complete the Minute Survey and drop the card in a box on their way out. Thirty-nine patients were eligible to participate in the survey. Of these eligible patients, 30 responded (response rate of 77%). Data were collected over 2 days and the control limit was set on the basis of the performance during the day with least consecutive complaints. Data from 1 day provided performance benchmarks for the other day.

Among the respondents, 66% said that their care exceeded their expectations. The remaining 33% said that they were satisfied. No one reported that they were dissatisfied or that their care was below their minimum expectations. Even though all patients rated that they were either satisfied with their care or that their care exceeded their expectations, some complained in the open-ended question. Our analysis focused on this population of complaining satisfied patients. Figure 4 shows the results. As can be seen on day 1 (February 7), there were 3 complaints but the number of consecutive complains does not

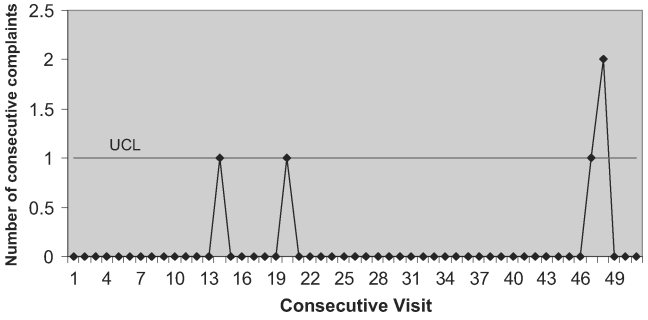

Figure 3. Control chart shows that statistically significant events can be detected in a small number of visits.[1]

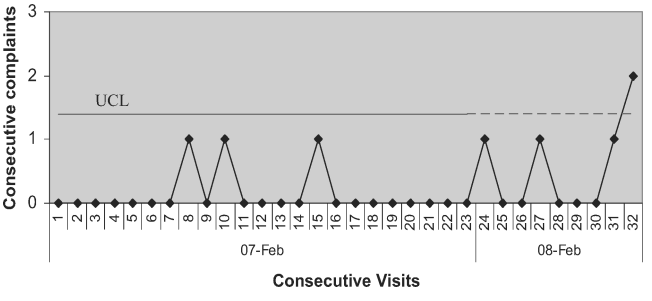

Figure 4. Consecutive complaints of satisfied patients in the pain clinic.

exceed the UCLs and therefore these do not suggest a departure from the normal pattern within this clinic. On day 2 (February 8), there were fewer visits but the frequency of complaint increased. The probability of a complaint on day 1 was 3 out of 23 visits (13% of the visits) and on day 2 it increased to 4 complaints in 11 visits (36% of the visits). Figure 4 shows that the pattern of complaints in day 2 exceeded the control limit derived from the pattern in day 1, and therefore there was statistically significant difference in the 2 days.

Note that despite the small number of visits surveyed, the results are quite informative and show one instance in which there were 2 consecutive complaints. This was on the second day and at end of the day. This may suggest that more attention should be paid to satisfaction with care on this day or the situation at the end of the day.

But what may have caused these complaints? Box 1 provides a list of what the patients who complained said.

As can be seen from a quick review of the comments provided by the patients, it is clear what they are complaining about. There is no need to classify these comments using questionnaires that formally ask for components or sources of satisfaction. Improvement teams can use the information in the open-ended questions to guide their deliberations.

[AQ8]

Box 1

On visit 8:	When leaving reminder appointments, the message is often garbled. Helpful to speak more slowly.
On visit 10:	Everything was ok. Dr was very late for my appointment at 11:15 AM.
On visit 15:	Wait was too long.
[AQ9] On visit 24:	Doctor was 20 min late.
On visit 27:	Doctor needs to be on time. Front desk is great.
On visit 31:	Scheduling of appointment behind—waited 30+ past appt time. Dr was courteous and apologized for the wait.
On visit 32:	Would be nice to have magazines in lobby and room to help w/wait.

COST OF SURVEY

The cost of surveying dissatisfied patients is a function of the sample size needed to establish patterns of care. Note that in constructing the control chart, in the above section, we examined a short interval of 14 days, involving 152 patients, 51 of which had responded. Contrast this with data collection required in standard satisfaction surveys, some of which require each patient to complete a survey—presumably because filling the survey form is supposed to be therapeutic.[20]

We will use CMS's required procedures to estimate the cost of conducting the Hospital version of Consumer Assessment of Healthcare Providers and Systems (H-CAHPS) versus the Minute Survey. We assume that the average cost of a mail order survey is \$40 per survey mailed[21] and 10% of this cost is for stamp, printing the questionnaire, and cost of envelope; 90% of the cost is for time of personnel to send the survey, receive responses, enter the data, and analyze the data.[22] Centers for Medicare and Medicaid Services requires collection of 300 surveys per disease category.[23] If we assume that in field conditions the response rate for long surveys, such as CAPHS is 38%;[24,25] then 789 surveys need to be mailed to receive 300 responses back. The total cost of \$40 per survey is expected to be \$31 560 per disease category, within which patient satisfaction is assessed. Data suggests that short surveys, like the Minute Survey, in comparable conditions might improve response rate to 59.4%,[26,27] in which case 505 surveys are needed to obtain the CMS's requirement of 300 responses. If [AQ6] we assume that the cost of the mailed post card is \$1 per card[28] versus \$4 per mailed long questionnaire; if we assume that personnel time is predominantly in data entry and that this cost will be reduced proportional to the number of items in the questionnaire (16 items versus 2 items), then the total cost of each mailed postcard is expected to be $\$2 + 38/8 = \$7$ per card. At this rate, the total cost of completing the CMS survey, if we were to use the Minute Survey, is \$3535. On the basis of these calculations, the Minute Survey is expected to be 89% less cost than the current H-CAPHS.

Even more savings can be accomplished if we can change the CMS's straight random sampling method to either inverse sampling or to adaptive sampling. Inverse Sampling collects data until a certain number of dissatisfied patients are identified. If dissatisfied patients are rare (as it often is), data show that this method of sampling will further reduce the sample size needed.[29] If dissatisfied patients are very rare (less than 1%), adaptive sampling can be done. In this approach, sampling intensifies in time periods where a dissatisfied patient is found, assuming that the next dissatisfied patient is likely to be around the same time and in the same clinical location. For example, consider data in Figure 4. In visit 8, a dissatisfied patient has been found. If we were using adaptive sampling, then the rate of sampling would increase at this point. More patients from this time period will be sampled. If dissatisfaction is a systemic problem, then dissatisfied patients should come in groups. Imagine a situation where a physician gets to work late, causing many patients to be backed up and have long waiting times. Several consecutive patients will be dissatisfied. In adaptive sampling, when one dissatisfied patient is identified the search continues until additional patients are identified. In this fashion, more dissatisfied patients are included in the survey and more precise statement can be made about their views. Details of adaptive sampling and use of various process charts for analysis of data from adaptive sampling can be found in the work of Reynolds and colleagues.[30,31]

DISCUSSION

Healthcare managers and clinicians are concerned with cost and value of satisfaction surveys.[22] We have designed and put in use a simplified survey tool as well as a method of analysis that radically reduces the cost of conducting satisfaction surveys. These cost reductions are accomplished in several ways:

1. The Minute Survey is shorter than most standard satisfaction surveys and thus costs less to print, distribute, and collect through mail or phone interviews.
2. A review of response rates to satisfaction surveys has shown that there is a weak negative relationship between number of items in a questionnaire and the response rate ($r = -0.29$).[32] Questionnaires with more than 1000 words have less response than questionnaires with fewer words (38% vs 59.4%). Our experience suggested a response rate between 34% and 77%. Because of the higher response rate, the Minute Survey is expected to require less follow-up reminders, to encourage patient participation. When fewer people have to be reminded to respond, the cost of conducting the survey is reduced.
3. The Minute Survey uses time to dissatisfied patient, which reduces the number of observations needed and consequently reduces cost of conducting the survey.

We believe these gains in efficiency of operations are achieved without loss of any significant information. A short, low cost, efficient survey tool will hopefully enable organizations to focus less on data collection and do more in improving care processes.

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[AQ7]

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Appendix: Telephone script for Minute Survey

This telephone interview script is provided to assist interviewers while attempting to reach the respondent to conduct Minute Survey. This script is a modification of the script recommended by the Centers for Medicare and Medicaid Services for Consumer Assessment of Healthcare Providers and Systems. In this script, all text that appears in lowercase letters should be read normally and the text in UPPERCASE letters should be replaced with relevant data and then read. Text between brackets, <>, should not be read. There are no skip patterns in this script and any question may be left blank or missing a response.

Hello, may I please speak to [SAMPLE MEMBER NAME]?

<1> YES [GO TO INTRODUCTION TO PATIENT]
<2> NO [REFUSAL]
<3> NO, NOT AVAILABLE RIGHT NOW [SET CALLBACK]

IF ASKED WHO IS CALLING:

This is [INTERVIEWER NAME] calling from [DATA COLLECTION CONTRACTOR]. We are conducting a survey about healthcare. I am calling to talk to [SAMPLE PATIENT NAME] about a recent healthcare experience.

IF ASKED WHETHER PERSON CAN SERVE AS PROXY FOR SAMPLE

PATIENT:

For this survey, we need to speak directly to [SAMPLE PATIENT NAME]. Is [SAMPLE PATIENT NAME] available?

<1> YES
<2> NO [GO TO THANK YOU]
<3> DK [GO TO THANK YOU]

INTRODUCTION TO PATIENT

Hi, this is [INTERVIEWER NAME], calling from [DATA COLLECTION CONTRACTOR] on behalf of [HEALTHCARE ORGANIZATION]. I am calling today to talk to you about the care you got from [HEALTHCARE ORGANIZATION]. The [HEALTHCARE ORGANIZATION] is carrying out a 1-minute survey of your reaction to the service. Let me tell you a little about the survey before we continue. The survey has 2 questions and is expected to take 1 minute to complete. You have been chosen as part of a random sample. Your opinions are very important because they reflect the opinions of other people like you. The results of this survey will be used to improve care. You may choose to do this interview or not. If you do choose to participate, your answers will be aggregated with others before they are shared with your health care providers. Your decision to do the interview will not affect your health care or the benefits you get. Do you want to participate?

<1> YES [GO TO S1 RECEIVED CARE]
<2> NO [GO TO THANK YOU]
<3> DK [GO TO THANK YOU]

S1: RECEIVED CARE

Ok, let's begin. Our records show that you recently received care at [HEALTHCARE ORGANIZATION]. Is that right?

<1> YES
<2> NO [GO TO THANK YOU]
<3> DK [GO TO THANK YOU]

Q1 RATING OF SATISFACTION

How would you rate your overall satisfaction with the care you received? Would you say it exceeded your expectation, you are satisfied with care, you are not sure, you are dissatisfied with care or it did not meet your minimum expectations.

<1> Exceeded expectation
<2> Satisfied
<3> Not sure
<4> Not satisfied
<5> Did not meet minimum expectation

Q2 EXPLANATION OF RATING

What worked well and what needed improvement? [DO NOT PROBE, DO NOT PARAPHRASE THE RESPONSE, RECORD VERBAITUM]

THANK YOU

Thank you for your time.

Title: Rethinking Satisfaction Surveys: Minute Survey

Authors: Farrokh Alemi, Nadir Badr, Sharon Kulesz, Cathy Walsh, and Duncan Neuhauser

Author Queries

AQ1: Please check whether author affiliations are OK as typeset and provide the highest educational degrees for Nadir Badr, Sharon Kulesz, and Cathy Walsh.
AQ2: Please verify what 2 stands for, in the text.
AQ3: In footnote 1, please verify what does "In clinics, we prefer visits until dissatisfied patients appear and in hospitals, we prefer number of discharges till dissatisfied patient" mean, is the sentence OK?
AQ4: Please verify whether it would be OK to change the sentence "I don't name of drug, but it was white/milky" to "I don't know the name of drug, but it was white/milky."
AQ5: Please verify whether it would be OK to change the sentence "the doctor's office didn't give me orders and it was quite a hassle getting thing done" to "the doctor's office didn't give me orders and it was quite a hassle getting things done."
AQ6: Please check the sentence (Data suggests that short surveys, like . . . 300 responses) for intact intended meaning.
AQ7: Reference list has been renumbered, please check.
AQ8: Check whether the box is OK as typeset.
AQ9: Is the change in the sentence (Doctor was 20 min late) OK?
AQ10: Please provide the permission letter for printing this table.
AQ11: Please check whether Figure 1 is accurately cited in the text.